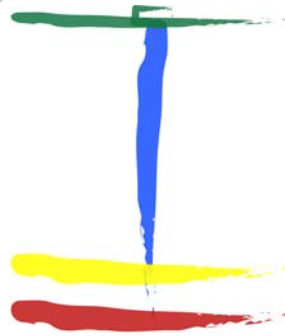




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SAPIERR II

Strategic Action Plan for Implementation of European Regional Repositories: Stage 2

Work Package Public and political attitudes

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Contents

1	Introduction	3
2	Objectives of this report	4
3	Public and political attitudes towards shared repositories.....	5
3.1	The IAEA report.....	5
3.2	The Eurobarometer survey on radioactive waste	7
3.3	Positions in favour and against multinational repositories.....	10
4	National policies and practices	13
5	The position of national governments and international bodies.....	16
6	Results of a survey to GMF local representatives	19
6.1	The scope.....	19
6.2	Results	21
6.3	Discussion.....	31
7	Preliminary recommendations for the communication strategy of the EDO	32
8	Conclusions	35
9	References	36
10	Annex 1. The questionnaire.....	38



1 Introduction

Soon after the peaceful use of nuclear energy began to spread in the 1960s and 70s there were proposals for multinational solutions to providing fuel cycle services to power plant operators (IAEA, 2004). However, for the final steps in the cycle, the management and disposal of spent fuel or radioactive wastes, it was only reprocessing services that were actually implemented multinationally. These were provided by countries such as France, the UK and Russia. These countries originally also provided a disposal service since they did not return any reprocessing wastes to their customers. With time, however, a waste return clause was included in new reprocessing contracts – mainly as a reaction to public and political pressures in the reprocessing countries.

Interest revived in the late 1990s, driven both by the high costs of geological repository programmes and also by the security concerns associated with the prospect of fissile material being widely distributed across the world. Although several initiatives were proposed, none led to success, partly because the proposed approaches were judged to be premature and too commercial. Accordingly, in 2002, the not-for-profit organisation, Arius (Association for Regional and International Underground Storage), was established to help partner organisations from various countries explore the possibilities of shared disposal facilities. The current growing world-wide interest in initiating or expanding nuclear power programmes also emphasises the need for all countries to have a credible disposal strategy. For many, especially new or small programmes multinational cooperation leading to shared facilities could be an attractive option.

In Europe the Parliament and the EC have both expressed support for concepts that could lead to regional shared facilities being implemented in the EU. The EC has funded two projects that can form the first steps of a staged process towards the implementation of shared regional or international storage and disposal facilities. In the period 2003 to 2005, the EC funded the project SAPIERR I (Support Action: Pilot Initiative for European Regional Repositories), a project devoted to pilot studies on the feasibility of shared regional storage facilities and geological repositories, for use by European countries. The SAPIERR I project looked at the basic technical and economic feasibility of implementing regional, multinational geological repositories in Europe. The studies [Stefula 2006, Boutellier and McCombie 2004, Chapman et al.2005] indicated that shared regional repositories are feasible and that a first step could be to establish a structured framework for the future work on regional repositories.

The present SAPIERR II project (Strategic Action Plan for Implementation of Regional European Repositories) examines in more detail specific issues that directly influence the practicability and acceptability of such facilities. If these are to become a reality a dedicated organisation will be required that can work towards the goal on the extended timescales that national disposal programmes have shown to be necessary. Specific terminology is introduced in the SAPIERR II project to describe the organisations that may eventually be formed for performing the work leading to implementation of a regional repository in Europe. The terms introduced are a European Development Organisation (EDO) and a European Repository Organisation (ERO). The definitions of EDO and ERO are as follows:

Project No.: Contract Number: FP6-035958	Revision: 0 Date: 05/2008	Report WP 5 Page No.: 3/41
--	------------------------------	-------------------------------



- **EDO (European Development Organisation):** the initiating, non-profit organisation for a shared geological disposal facilities project. Its objective is to establish the systems, structures and agreements and carry out all the work necessary for putting in place a shared waste management solution and geological repository (or repositories). This work would continue through the investigation of potential sites and up to the point of license application to begin the construction of a repository. It is assumed that this takes about 10+ years. At this point the EDO may decide to transform into or separately establish the ERO.
- **ERO (European Repository Organisation):** the implementing organisation for waste disposal. The ERO would be the license holder for the repository and responsible for all subsequent operational activities in a host country that has agreed to dispose of wastes from other European countries. The form for the ERO will be chosen at a future date by the members of the EDO, assuming that they come to the conclusion that the EDO organisation needs to be altered. The choice will also be strongly influenced by the preferences of the country or countries that have been identified as repository hosts. The ERO could be either non-profit or commercial in structure.

The goal of SAPIERR II (2006-2008) is to develop possible practical implementation strategies and organisational structures that will enable a formalised, structured European Development Organisation (EDO) to be established after 2008 for working on shared EU radioactive waste storage and disposal activities. The tasks in the SAPIERR II project are listed below. Each task translates into a Work Package (WP), as follows:

1. Preparation of a management study on the **legal and business options** for establishing a European Development Organisation (EDO).
2. A study on the **legal liability issues** of international waste transfer within Europe.
3. A study of the potential **economic implications** of European regional storage facilities and repositories.
4. Outline examination of the **safety and security impacts** of implementing one or two regional stores or repositories relative to a large number of national facilities.
5. A review of **public and political attitudes** in Europe towards the concept of shared regional repositories.
6. Development of a **Strategy and a Project Plan** for the work of the EDO.
7. **Management and dissemination** of information.

2 Objectives of this report

The objective of Work Package 5 (WP5) of the EC FP6 EURATOM Specific Support Action SAPIERR II is to explore public and political attitudes towards radioactive high

Project No.: Contract Number: FP6-035958	Revision: 0 Date: 05/2008	Report WP 5 Page No.: 4/41
--	------------------------------	-------------------------------



level radioactive waste (HLW) and spent nuclear fuel (SNF) multinational repositories. In order to do that, the present document examines the different documents and initiatives which can shed light on the public and political attitudes towards a shared European deep geological repository for the disposal of HLW and SNF. A literature review is presented in Section 3, with the objective of discussing the main issues that can influence public and political opinions in favour or against multinational repositories. In this section, the international report on multinational repositories, as well as the results of the Eurobarometer surveys (1998 and 2001) that refer to multinational disposal, are analysed. In Section 4, national policies and practices are shown. Section 5 discusses the position of national governments and international bodies regarding shared European repositories. In Section 6, the results of a questionnaire filled in by mayors of municipalities hosting nuclear facilities are presented. Section 7 provides recommendations for the communication strategy of the EDO, i.e. the organisation charged with taking over the shared repository process in the first phase. Finally, Section 8 draws some conclusions on public and political perception of multinational repositories.

3 Public and political attitudes towards shared repositories

Most studies looking at public and political attitudes towards geological repositories are focused on the national level or on comparisons between public acceptance in different siting programmes (IAEA, 2007; OECD, 2007). However, little published information is available on public and political acceptance regarding shared repositories. Therefore, this report lays out key points affecting public and political attitudes towards shared repositories arising from the available information on multinational radioactive waste repositories.

3.1 The IAEA report

The International Atomic Energy Agency (IAEA) published in 2004 the report “*Developing multinational radioactive waste repositories: Infrastructural framework and scenarios of cooperation*”. The report analyses the main relevant issues about multinational repositories. The most useful part for exploring public and political attitudes (the objective of this WP), and in particular the level of acceptance that a country or a number of countries could expect for a multinational repository, is the section focused on benefits and disadvantages. The most important benefits and disadvantages, according to the IAEA, are illustrated in Table 1.



Table 1. Advantages and disadvantages of a multinational repository

	Advantages	Disadvantages
Security	Global increase in security since there will be fewer facilities; these can be closely guarded and they can be sited in trusted countries.	Increased attractiveness of larger inventories of radioactive wastes for potential terrorist. Higher consequences of a possible attack. Larger transport distances
Environmental	Increase of environmental protection. Lower total number of future repositories. Reduction of environmental risks associated to inadequately funded repositories. Environmental improvements if part of the revenues obtained are used for environmental remediation.	Construction of larger facilities. Higher doses gathered from the handling of larger waste volumes for host country. Larger environmental risk due to the multinational transport. Construction and operation of potentially more extensive road or rail infrastructure.
Economic	Reduction of costs for all countries due to scale economies. Economic benefits for the host country. Creation of employment opportunities, infrastructure improvements and increased taxes for the host country. The Creation of an European Market for Tradeable Nuclear and Radioactive Emission Permits.	Higher costs for longer transport distances. Additional administrative costs. Decade-long economic risks associated with failure or delays, as well as with inflation and changes of regulatory requirements.
Technical	More expertise. More funding available for developing robust engineered systems. Broader choice for potentially suitable sites	Greater variety of waste sources and possible differences in the conditioning technologies and waste packaging

Source: adapted from IAEA(2004).

In general, the IAEA report recognises that it will be difficult to obtain public support for a multinational repository. The main reasons for that also apply to national repositories, i.e. the linkage to nuclear power, the general distaste for waste and the fear of radioactivity. These aspects would be amplified for international disposal. In this context, transparency and information would greatly facilitate public acceptance of a multinational repository. Moreover, it is important that advantages and costs are equally shared among the host and partner countries as well as that the international standard for security are respected.

3.2 *The Eurobarometer survey on radioactive waste*

The Eurobarometer survey on radioactive waste is carried out by the European Commission every three years approximately. The objective is to gather information about opinions, beliefs, knowledge and wishes on different issues of a representative sample of EU population. The sample includes about 16.000 citizens¹.

A specific question referring to multinational repositories was formulated in 1998 and 2001, but in a slightly different way in the two surveys.

In 1998, the respondents could choose among the three following statements:

- ✓ “Only a few underground tips should be built and access should be given to those European Union countries which would be prepared to pay”
- ✓ “Each country which produces radioactive waste should have its own underground tips”
- ✓ “Don’t know”

In 2001, the question about shared repository was: “From an economic and environmental point of view, building an underground disposal site for the most hazardous category of radioactive waste, such as that from spent nuclear fuel, is a complex project. In your opinion, where should such sites be built? (one answer only):

- ✓ In each EU country that produces this category of radioactive waste
- ✓ In only a few EU countries with access shared amongst co-operating countries
- ✓ Don’t know

Since the two questions asked in 1998 and 2001 were substantially similar, the results can be compared, as shown in Table 2.

¹ 1000 for each EU Member State with the exception of Germany (1000 in the ex-West Germany and 1000 in the ex-East Germany), Luxembourg (604) and the UK where, out of the total of 1300 interviews there were 312 in Northern Ireland.



Table 2 Results of the Eurobarometer about multinational repositories

Country	National 1998	National 2001	Regional 1998	Regional 2001	Don't know 1998	Don't know 2001
B	79.7	63.5	11.4	19.5	8.9	17.0
DK	67.7	52.8	26.1	37.4	6.3	9.8
D-W	63.4	61.0	20.7	18.4	14.7	20.7
D-total	62.7	60.2	22.0	18.8	14.2	21.0
D-E	59.9	57.4	27.0	20.5	12.4	22.2
GR	88.4	72.6	7.8	13.3	3.8	14.1
E	81.4	61.9	5.1	14.6	13.5	23.5
F	82.6	68.3	9.4	18.2	8.0	13.5
IRL	65.2	52.0	7.9	14.4	26.8	33.6
I	78.8	69.2	6.8	11.9	14.4	18.9
L	68.8	63.1	16.6	26.1	14.5	10.8
NL	69.2	48.1	24.2	35.7	6.6	16.2
A	65.1	60.9	15.9	18.2	19.0	20.9
P	81.6	61.9	6.5	11.9	11.9	26.2
FIN	72.0	60.2	19.0	26.9	9.0	12.9
S	73.9	72.2	19.9	21.3	6.2	6.5
UK	75.6	61.1	8.4	18.9	16.0	20.0
EU 15	74.8	63.3	12.4	17.9	12.5	18.8

Source: INRA, 2002

The results show that the percentage of European citizens that think that radioactive wastes should be disposed of within the national borders of the producing country decreased from 75% to 63%. The share of EU citizens that think that regional wastes should be disposed of in multinational repositories increased from 12% to 18%. Finally, the share of citizen that do not have an opinion increased from 12 to 19%.

The countries with a higher share of opinions in favour of multinational repository are Denmark (37% in 2001), the Netherlands (36% in 2001) and Finland (27% in 2001). Luxembourg share increased from 17% in 1998 to 26% in 2001. The countries with a higher share of opinions in favour of national disposal are Greece (73% in 2001), Sweden (72% in 2001) and Italy (69% in 2001). One possible explanation could be the low degree of trust in the state that could be found in Mediterranean countries, like Greece and Italy, where the political culture can be characterised by the weakness of civil society and the non-participatory traditions. On the other hand, a possible explanation for the Swedish result is that in Sweden there was a debate on a possible shared repository and opinions against it emerged. According to Dyck and Bonne (2000), the fact that their own national programme is already in an advanced stage contributes to considering this multinational alternative as a threat to their programme.

Three further questions were asked in 1998 Eurobarometer about the possibility of creating a multinational repository:

- ✓ Q.54a. Would you be for or against (OUR COUNTRY) storing radioactive waste from another European Union country, if that country was prepared to pay?



- ✓ Q.54b. And would you be for or against (OUR COUNTRY) processing radioactive waste from another European Union country, if that country was prepared to pay?
- ✓ Q.54c. And would you be for or against (OUR COUNTRY) undertaking to dispose of radioactive waste from another European Union country, if that country was prepared to pay?

The result showed that in 1998 most of European population were against of their own country temporarily storing radioactive waste from another EU country (86.4%), processing it (78.3%) or undertaking it to dispose it of (80%).

A factor that could help us explain the negative results of the Eurobarometer survey with regards the shared repository possibility could be the way the question was formulated. In Germany, the Institute for Technology Assessment and Systems Analysis in Karlsruhe carried out in 2003 a survey on international disposal (Hocke-Bergler P. et al., 2003). The results were quite different from the results of the Eurobarometer. One of the explanations may be the different formulation, i.e. “Which solution for the radioactive waste repository are you in favour of? Should each European region that produces nuclear energy search for a siting of its radioactive wastes or should an international solution be sought?”.

To this question, 55.6% of the respondents preferred international solutions, whereas only 31.5% were in favour of a national solution. 70% of those in favour of an international solution were in favour of a repository located in the EU, as opposed to a repository outside the EU. It is also interesting to note that 40% of the respondents accepted the idea of a multinational repository located in Germany, and 40% were against, whereas the rest were undecided. Finally, the NIMBY effect could be observed, since 80% declared themselves against the repository being sited in their own region of Germany (whether the facility be national or international).

Unfortunately, in the Eurobarometer survey published in 2005 no question on multinational repositories was included. Therefore, a chronological analysis of the evolution of EU citizens regarding the level of support to this initiative cannot be undertaken.

Because of the interest of the SAPIERR II consortium to have an analysis of the evolution of public attitudes towards regional repositories, the leaders of WP5 of SAPIERR II proposed a question on multinational repositories to be included in the 2008 Eurobarometer. The questions were agreed by the partners of SAPIERR II after several iterations. The final formulation which was sent to DG TREN stated the following:

“There is broad consensus that geological repositories can be used to safely dispose of radioactive wastes. While several countries will proceed with such developments within a national framework, the EC has suggested that safety and security of radioactive waste across the EU can be attained more efficiently by technical and economic cooperation between countries to develop one or more shared geological repositories. No country or community would be compelled to host a repository against its will”.



A. Do you agree that EC collaboration to develop shared repositories should be encouraged?

B. Would you agree to your country participating technically and scientifically to develop shared repositories?

C. Would you accept that your country export radioactive wastes, subject to proper controls and assurance of safety, to a shared repository in a willing EU country that would receive appropriate benefits?

D. Would you accept that your country import and dispose of radioactive wastes, subject to proper controls and assurance of safety, in a shared repository at a willing site that would receive appropriate benefits?"

However, the European Commission decided not to include any question on multinational disposal. This decision is disappointing because it prevents the possibility of monitoring the changes in public opinion about shared repositories. Since 2001 much work has been carried out on the concept of shared repositories and the concept has been discussed in different policy arenas. If the Eurobarometer survey were carried out on a regular basis, the results may show a change in the opinion of European citizens about shared repositories.

3.3 Positions in favour and against multinational repositories

Some papers have been published in recent years on multinational repositories, mainly dealing with some of the aspects underlined by the IAEA report. McCombie et al. (2004), McCombie and Chapman (2005), Boutellier et al. (2006), Mele (2006), Verhoef et al. (2007) explain the benefits of multinational repositories.

The main advantages of multinational repositories are economic, and depend on the large economies of scale of radioactive waste repositories. Since a large share of the cost is fixed and does not depend on the quantity of wastes, multinational repositories would allow reducing the cost per unit of waste treated. For this reason, shared repositories would allow countries with small nuclear programmes to afford a deep geological repository, which most European countries consider a safe and secure option for HLW and SF (IAEA, 2007). According to the mentioned authors, other advantages may include improved global security (because safeguarding a single multinational repository may be easier than various national ones), lower environmental impact (due to the lower number of repositories to be built) and the higher number of possible sites, which could allow to choose the best one from a geological point of view, increasing in this way global safety. Furthermore, a multinational repository would favour collaboration among experts and scientists of different countries, encouraging exchange of know-how and experience.

As regards the critical issues that could raise public opposition, the most important ones belong to the ethical sphere. For example, Marshall (2005) and Nirex (2005) make the point that it is unfair for a country to make itself responsible for wastes produced in other countries. In particular, the main concern of the authors is that, in order to avoid protests in European countries, the radioactive wastes end up in countries with a less developed democratic system, where decisions are made by small elites without



allowing population to participate in them. The only country explicitly considering proposing itself as a candidate, i.e. Russia (McCombie et al., 2005), seems to belong to this category. The same applies to Kazakhstan, which proposed itself as volunteer years ago (McCombie and Chapman, 2004). Therefore, in order to be accepted by the European public opinion, the multinational repository proponents need to demonstrate that they are not seeking to solve the problem of radioactive waste disposal, often paralysed by local opposition, by sending the wastes to countries where the population is less able to protest due to the weaker institutional and social structure. Moreover, it is important that the multinational repositories do not take advantage of lower environmental standard or financial difficulties of a developing or transition country.

This ethical point is recognised clearly by those promoting multinational repository concepts. For example, Council Directive 2006/111/EURATOM on supervision and control of shipments of radioactive waste and spent fuel states that in case of shipment to countries not belonging to the EU, the authorities of the state of origin shall not authorise shipments to third countries that do not have the administrative and technical capacity and regulatory structure to manage the radioactive waste or spent fuel safely.

Similarly, article 27 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management states that transboundary movements are only allowed if the importing country has the administrative and technical capacity, as well as the regulatory structure, needed to safely manage the spent fuel or the radioactive waste. In addition, the Joint Convention prohibits the shipment of its spent fuel or radioactive waste to a destination south of latitude 60 degrees South for storage or disposal.

For the Russian option, Chapman and McCombie (2005) lay out the requisites that an international repository situated in Russia should fulfil in order to be accepted by the international community. The authors underline the necessity of an overall acceptability of the international community. In this sense an important factor will be the fulfilment of the highest safety and security standards and the use of the best available technology, as well as a clear economic advantage for the hosting country.

According to other authors, multinational repositories can have a positive ethical impact, in the sense that they could allow the radioactive waste disposal problem to be dealt in the next years, avoiding leaving this burden to future generations due to a lack of funds (Boutellier et al., 2006). Other ethical arguments in favour of shared repository include the possibility of increasing safety and security, and the lower environmental impact due to the lower number of needed repositories (see section 3.1).

Another key point that could influence public acceptability is the economic benefit for the hosting country. Duncan (2000) argues that an approach based on community volunteering together with a fair compensation system is essential to make a repository accepted. According to the author, economic benefits should not be seen as bribes, and should not be only direct money transfer but also consist of some investment that can improve the living standards of the community. In addition, it is important not to follow a DAD approach (decide-announce-defend) but explain in a transparent way from the beginning the decision-making process. According to McCombie et al. (2004), McCombie and Chaptman (2005), Boutellier et al. (2006) Verhoef et al. (2007), economic benefits for local communities hosting a multinational repository would make



for a fair sharing of the costs and benefits, effectively voiding the claims of the multinational repositories being unethical. It can be noted that some can claim that monetary payment does not necessarily compensate environmental and social impacts, and that monetary payment is less effective than physical care for the purpose of encouraging responsibility for self-generated wastes (Marshall, 2005).

In addition, a point that may raise concern may be the possible higher difficulty to find agreements among countries on cost allocation, schedule, legal mechanisms, allocation of responsibility and liabilities, classification of waste, etc. Finally, lack of an international authority with the competence of controlling and enforcing the international agreements could be a reason of mistrust, especially considering that multinational repositories imply a very long time horizon. These kinds of problems should be overcome with a solid agreement among countries, with long term-validity and an international institution monitoring whether safety and security standards are being maintained and whether all partners are fulfilling their responsibilities. Opponents are sceptical about the possibility of establishing and maintaining an agreement among countries, which need to be in force for decades (Marshall, 2005; Nirex, 2005). Therefore, in order to increase acceptability of multinational repositories, it is important to demonstrate in a credible way how an agreement about these issues would be reached, and which enforcing mechanism could be set up. In this context, the creation of a European Development Organisation may be useful to define the legal and institutional aspects.

From a policy-maker point of view, multinational repositories may be seen as hurdles for national disposal programmes (McCombie and Chapman, 2005, Nirex, 2005). First of all, multinational repositories could constitute a disincentive for the development of national repositories, by offering an alternative solution to the problem of the HLW and SF disposal, thereby reducing the priority and funding of national disposal programmes. This need not happen, as illustrated by the fact that some countries already follow a dual track strategy: preparing the necessary steps to establish national repositories, but also leaving the door open to the possibility of joining a multinational repository. Examples of countries with a dual track strategy include Belgium, Czech Republic, Hungary, Latvia, Lithuania, the Netherlands, Slovakia, Slovenia and Switzerland (Mele, 2006). Secondly, the fear that a national repository would accept HLW and SF from foreign countries could make national repositories less acceptable to local communities. In this regard, the argument made by McCombie and Chapman (2005) is that these concerns can be allayed by the firm assertion by institutions with high credibility, such as the EU, the IAEA and national governments, that no country will be forced to accept HLW from foreign countries.

However, the decisions made by the authorities not necessarily reflect the public will. For this reason, in order to reduce opposition to multinational repository, the public should also be assured that they will be consulted by their governments before taking such a decision, and that their opinion would be taken into account.

Finally, the multinational repository option is understandably very interesting for small countries that could not afford alone the costs of a deep geological repository, such as for example Slovenia (Stritar, 2006) and Romania (Biro and Rodna, 2003). In these countries it may be easier to reach consent on international collaboration on HLW and SF waste disposal.



It is important to observe that, as underlined in the 2004 IAEA report, most of the difficulties that a shared repository would face are the same as those facing a national repository. The concept, and even more the siting, of a national deep geological repository normally arouses opposition at the local and national level, mainly due to opposition to nuclear energy, the aversion for wastes and the fear of radioactivity. The IAEA report recognises that all these aspects are magnified in the multinational context. The added difficulties with respect to national programmes derive from the fact that the benefits of a shared repository would be enjoyed by all the participating countries, whereas the disadvantages would be borne only by the local community hosting the international waste facility.

The further disadvantages of international repositories with respect to national ones are those reported in Table 1, and are related to the longer transport routes and the larger volumes of radioactive wastes at a disposal site, which increase the risk and the possible effects of a terrorist attack. Finally, an international repository could imply more difficulty in finding agreements among countries on cost allocation, schedule, legal mechanisms, allocation of responsibility and liabilities, classification of waste, as well as higher economic risks associated with failure or delays, as well as with inflation and changes of regulatory requirements. These issues deserve close attention and should be addressed in the EDO communication strategy, in order to be prepared to reply to stakeholder concerns.

4 National policies and practices

Section 3 analyses the available information on public attitudes concerning the concept of a shared repository. Section 4 and 5 are dedicated to the political attitudes of the European governments and international institutions, including legislation and practices, as well as official documents and declarations.

Table 3 shows national policies and practices of different European countries with respect to import and export of radioactive wastes and spent fuel. Only few countries explicitly accept the possibility of importing or exporting radioactive wastes. Whereas many ban import of wastes (i.e. Austria, Bulgaria, Croatia, Czech Republic, Hungary, Italy, Latvia, Lithuania, Romania, Slovakia, Finland and France), very few legally ban export (i.e. Finland). Various countries experienced transboundary shipments, as the last column of Table 3 shows. The legal/regulatory framework of the countries and the European legislation are discussed in WP2 of SAPIERR II.



Table 3 National experiences and practices

Country	National experience and practices
SAPIERR I Countries	
Austria	There were early negotiations with intent to export Zwentendorf NPP fuel before the power plant was abandoned.
Belgium	Licenses for transboundary shipment have been granted for: <ul style="list-style-type: none"> - Transfer of irradiated fuel from the Dutch nuclear power plant of Borsele to COGEMA La Hague in France; - Export of the irradiated MTR fuel assemblies of reactor BR2 from Mol to La Hague; - Import of vitrified high-level radioactive waste from COGEMA La Hague to Belgoprocess Dessel. This waste is the result of the reprocessing of irradiated fuel of the nuclear plants of Doel 1-2 and Tihange 1 which was transferred previously from Belgium to France; - Import of waste, generated either through the decontamination of materials (e.g. pumps) or as a consequence of melting of radioactively contaminated metal; - Import of used sources from Luxemburg within the framework of the existing convention between Luxemburg and Belgium.
Bulgaria	Bulgaria exported spent fuel to Russian Federation (through the territories of Moldova and Ukraine).
Croatia	The Radiation Protection Law bans any import of spent fuel and radioactive waste. Currently owns spent fuel from Krysko NPP in Slovenia and will have to organise a national disposal route if no bilateral or multinational arrangements can be made.
Czech Republic	The import of RAW is prohibited by the Atomic Act. Former Czechoslovakia planned to transport the SF to the USSR, after five years cooling in NPP Jaslovské Bohunice. When Czechoslovakia split into Czech Republic and Slovak Republic in 1993, an interim storage in NPP Dukovany was built and SF had to be transported from Jaslovské Bohunice (Slovakia) to Dukovany (Czech Republic). Between 1995 and 1997 fourteen reimportation transports of fuel spent took place by rail from Slovakia to Czech Republic.
Hungary	Formerly exported SNF to Russia.
Italy	Trans-boundary movements due to the reprocessing of spent fuel and the treatment of radioactive waste arising from nuclear fuel cycle and from medical or industrial activities. The radioactive wastes exported to EU countries are re-imported after their treatment. Recent efforts to send LLW to USA. Previously exported SNF for reprocessing with no waste return
Lithuania	Importing radioactive waste and spent nuclear fuels into Lithuania is not allowed, except if they are in transit or are returned to Lithuania as the country of origin. In 2004, three permits were issued to transport the radioactive waste from the country (disused sealed sources were returned to supplier).
Netherlands	Previously exported SNF for reprocessing with no waste return.
Romania	Import of radioactive waste (including spent fuel) is not allowed, except in the case of imports following directly from the processing outside Romanian territory, of a previously authorised export of radioactive waste (including spent fuel), on the basis of the provisions of international agreements or of contracts concluded with commercial partners.
Slovakia	Formerly exported SNF to Russia. Neither RAW shipments across SR territory, nor RAW imports or exports have been carried out since the Atomic Act came into force. The Atomic Act allows for import of RAW for the purpose of their treatment and conditioning on SR territory if export of RAW with a share activity was agreed by contract and authorised by the Nuclear Regulatory Authority of the Slovak Republic (ÚJD SR). Any other import of RAW to SR territory is prohibited.

Country	National experience and practices
Switzerland	Previously exported SNF for reprocessing with no waste return. In general, export of radioactive wastes is prohibited. However, authorisation can be given under restrictive conditions as listed in the Nuclear Energy Act. Recently, no radioactive waste has been exported from Switzerland for disposal purposes. Radioactive waste has been exported in the past for the purpose of treatment and conditioning and then reimported to Switzerland. Authorisations were in the past regularly issued in the context of the reprocessing contracts between the Swiss utilities and COGEMA (France) and BNFL (UK) under the Atomic Act of 1959, which is no longer in force. The Nuclear Energy Act introduces a 10-year moratorium on export of spent fuel for the purpose of reprocessing from 2006.
Other EU Countries	
Finland	Between 1981 and 1996, 330 tU of Finnish spent fuel was shipped to the USSR by a special train. However, the Nuclear Energy Act (1994) decided to give up this practice. After 1996, there have been few cases of transboundary movements of small quantities of radioactive wastes for research purposes.
France	Previously accepted SNF for reprocessing with no waste return. Spent fuel of Germany, Japan, Switzerland, Denmark and Belgium is reprocessed in the La Hague plant. The spent fuel reprocessing contracts with foreign nuclear power companies comprise a clause stipulating return of the wastes to their country of origin. Transboundary movements are carried out mainly by rail (except those with Japan, which use sea routes).
Germany	After July 2005, the shipment of spent fuel assemblies for reprocessing will by law no longer be permitted. Previously exported SNF for reprocessing with no waste return. SNF accepted from Germany under one time swap arrangement.
Spain	Has exported long lived wastes to USA and France. As destination country, Spain imported Spanish low and intermediate level radioactive wastes, which were previously exported for processing. The following wastes have been received: radioactive wastes from the decontamination of reactor coolant pumps at Spanish nuclear power plants; radioactive wastes from the treatment of liquid wastes from disused Spanish nuclear facilities; radioactive wastes from incineration for volume reduction.
Sweden	Previously exported SNF for reprocessing with no waste return. Swap with Germany. Studsvik Nuclear AB carries out volume reduction of radioactive waste on a commercial basis, by incineration of combustible waste and melting of scrap metal. The activities are to a certain extent based on services to companies abroad, and Studsvik imports radioactive waste and scrap metal for the purpose of volume reduction. The remaining radioactive waste is re-exported to the country of origin.
United Kingdom	Previously accepted SNF for reprocessing with no waste return. Operates substitution policy for reprocessing wastes.

Source: National Reports submitted for the Second Review Meeting of the Contracting Parties to the Joint Convention (2006), SAPIERR II, WP2;.



5 The position of national governments and international bodies

Boutellier et al. (2006) observe that the legislative situation of a country does not necessarily correspond with the governmental policy or with the position of national agencies. For example, in Germany, Sweden and France the laws accept exchange of wastes (but in France only imports), but the governments are strongly against multinational disposal. In the UK, despite the absence of a formal policy regarding import/export, the now defunct Nirex national waste agency was strongly opposed to multinational disposal solutions.

For this reason, it is important to explore the position of the national agencies, in order to assess the extent to which they consider multinational repositories as an option. The information shown in Table 4 was obtained through an analysis of the official documents and annual reports of the radioactive waste management agencies, as well as through questions directed to the agency staff requesting information from their agencies on their position regarding international repositories.

Table 4 Official position of National Agencies

N. Country	Agency	Strategy
SAPIERR II Partners		
1. Lithuania	RATA (http://www.rata.lt)	The strategy on radioactive waste management of Lithuania (http://www.rata.lt/en.php/about_rata/strategy) establishes that the possibility to create a multinational repository and to dispose of the spent nuclear fuel in other countries should be analysed. RATA funds its own participation in the present SAPIERR II project.
2. Netherlands	COVRA (http://www.covra.nl)	The idea of a shared repository was recognised by Parliament in 1984. COVRA is the lead organisation in SAPIERR II
3. Slovenia	ARAO (http://www.arao.si)	The National programme of radioactive waste and spent nuclear fuel management for the period from 2006 until 2015 states that the following options should be considered for SF disposal: export to a third country, disposal in a multinational or regional repository as well as a construction of geological repository in Slovenia. The programme establishes that national repositories should be considered only if multinational solutions will be unavailable. Possible regional solutions should be investigated together with Central and Eastern European countries with similar nuclear programmes and similar difficulties with the disposal of SF (Bulgaria, Czech Republic, Croatia, Italy, Slovak Republic, Hungary, Romania). Other options for international co-operation could be a EU initiative and exports of SF and HLW to a third country. ARAO funds its own participation in the present SAPIERR II project
4. Italy	ENEA (http://www.enea.it)	There are no official documents. However, Italy may be favourable to a shared solution of radioactive waste management. ENEA is a Work Package leader in the present SAPIERR II project
SAPIERR II Interest Group (SIG)		
5. Czech Republic	RAWRA (http://www.proe.cz/surao2)	The document establishing the Czech Republic Strategy for radioactive waste and spent nuclear fuel management, (http://www.proe.cz/surao2/Dokumenty/rwmaj.doc)

		includes a multinational repository among the options for High-level waste and Spent Nuclear Fuel Management, even though it underlines the existence of numerous technical, economic, legislative and political problems.
6. Hungary	PURAM (http://www.rhk.hu)	PURAM may consider international solution only after having elaborated and approved a national strategy for deep geological disposal, which is the priority
7. Romania	ANDRAD (http://www.andrad.ro)	Not available
8. Spain	ENRESA (http://www.enresa.es)	The 6 th General Plan on Radioactive Wastes (http://www.mityc.es/NR/rdonlyres/4B6B1F59-8685-4A98-A0A7-D03E0F6B0C39/0/SextoPGRR.pdf) states that the option of multinational, international or regional repository should be considered, notwithstanding the problems of public acceptance that it may imply.
9. UK	NDA (http://www.nda.gov.uk)	Not available
10. Finland	POSIVA (http://www.posiva.fi)	The environmental impact assessment of the final disposal facility for spent nuclear fuel (1999) states that radioactive wastes will be handled, stored and permanently disposed of in Finland
11. Sweden	SKB (http://www.skb.se)	SKB is firmly committed to the policy of no waste import to or export from Sweden. SKB has expressed concerns that assertions of opponents that they might have to accept wastes from other EU States can negatively impact on their programme. SKB has also recognised that shared solutions may be beneficial for other small national disposal programmes.
12. Latvia	BAPA (http://www.bapa.gov.lv)	No official documents
13. Switzerland	Nagra (http://www.nagra.ch)	Swiss national policy does not formally exclude multinational solutions and Nagra formerly had this as an official strategic option. Today Nagra's mission is focussed entirely on implementation of national repositories. The Government office now determining the siting strategy is very pessimistic about the present feasibility of multinational options but does recognise that if an acceptable international option should arise later, the waste producers could choose to participate.

It can be noted that only five out of thirteen countries considered, mention in their strategies the possibility of considering a multinational repository. These are: COVRA from the Netherlands, ARAO from Slovenia, RATA from Lithuania, RAWRA from Czech Republic and ENRESA from Spain. Thwo agencies state that the possibility of a multinational repository should be further analysed. The Spanish Agency ENRESA for example underlines the possible problems related to public acceptance. The initial critical attitude of the Czech republic appears to have changed. The Czech Minister of Industry and Trade proposed the initiation of a broad discussion about joint European project of high level waste repository at the meeting of the European Nuclear Forum in Prague, May 2008. The agencies with an openly favourable position on multinational repository are COVRA from the Netherlands and ARAO from Slovenia.

A possible explanation of the position of national agencies could be the fact that they may see an international repository in competition with the national programme, since



their main task is national disposal of radioactive wastes. Hence, various agencies have been given or have assumed the role of progressing only towards a national solution.

Notwithstanding that, the 2006 Summary Report of the Second Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC/RM.2/03/Rev.1) noted that many contracting parties mentioned the concept of regional repositories. Furthermore, it recognised that shared repositories could be appropriate solutions for some countries to join their efforts and resources for a common solution for final disposal.

Both the EC and the IAEA have shown support for the concept of shared repositories. IAEA Director General Dr. Mohamed ElBaradei affirmed in his “Statement to the Forty-seventh Regular Session of the IAEA General Conference 2003”²:

“Our consideration should also include the merits of multinational approaches to the management and disposal of spent fuel and radioactive waste. Not all countries have the appropriate conditions for geologic disposal - and, for many countries with small nuclear programmes for electricity generation or for research, the financial and human resource investments required for research, construction and operation of a geologic disposal facility are daunting. Considerable economic, safety, security and non-proliferation advantages may therefore accrue from international co-operation on the construction and operation of international waste repositories. In my view, the merits and feasibility of these and other approaches to the design and management of the nuclear fuel cycle should be given in-depth consideration. The convening of an Agency group of experts could be a useful first step”.

The IAEA’s 2004 report on the development of multinational radioactive waste repositories (see Section 3.1) concludes that:

“The global advantages of multinational repositories are clear and the benefits can be significant for all parties, if they are equitably shared”

A follow up report on the Viability of Multinational Solutions is currently being prepared at the IAEA.

In its web page, the IAEA states:

“For many countries, the option of reprocessing the fuel abroad is unlikely to be affordable. Moreover, if the fuel is shipped abroad for reprocessing, the problem of the final disposal of any returned high level waste will have to be addressed anyway. Sooner or later, every country with at least one research reactor, which continues to operate beyond the termination of acceptance programmes of the countries of origin, will need a final solution for spent fuel and/or high level waste. Clearly, access to a multinational long-term interim storage facility and eventually a multinational repository is the optimal solution”³.

The EU is also favourable to transboundary waste transfers under certain conditions. The draft Proposal for a Council Directive (Euratom) on the management of spent nuclear fuel and radioactive waste included in the „Nuclear Package“ allowed the possibility of shipments of nuclear waste from one Member State to another or to a third country, provided that they meet EU and international norms and standards. The original Explanatory Memorandum on the Directive contains the following relevant text:

² <http://www.iaea.org/NewsCenter/Statements/2003/ebsp2003n020.html>.

³ http://www-naweb.iaea.org/naweb/physics/ACTIVITIES/Fuels_and_Spent_Fuel_Management.htm



“Export of waste is also specifically mentioned in the Article. It is recognised that for certain Member States with very limited accumulations of waste, export to other countries probably represents the most viable option from the environmental, safety and economic points of views. However, these transfers can only be sanctioned providing the very strict conditions listed in the Article are respected. These conditions include the limitations and criteria concerning export of radioactive waste to third countries included in Euratom Directive 92/3. The proposal does not seek to limit a country’s right to be self sufficient in all matters of management of its waste, but does seek to encourage the sharing of facilities and services wherever possible.”

Finally, transboundary shipments are provided for in Article 27 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, which was signed by 42 countries. The Joint Convention allows transboundary shipments, provided that they respect some safety requirements.

6 Results of a survey to GMF local representatives

In order to complement the information obtained with the literature and legislative review as well as the analysis of the Eurobarometer survey, a questionnaire was handed out to local representatives of the Group of European Municipalities hosting nuclear Facilities (GMF). The objective of the survey was to assess their opinions and attitudes regarding a possible shared solution for radioactive waste disposal.

GMF is an association founded in 1993 by a group of European municipalities hosting nuclear facilities (<http://www.gmfeurope.org>). The mission of the association is to coordinate efforts to try to identify common concerns and exchange information on the way the local level can influence decision-making at high level institutions. In addition, GMF provides information and opportunities for participation to local population. GMF objectives are to improve information on nuclear issues at the local level and to increase participation of municipalities with nuclear facilities in the decision-making process.

It is clear that a survey of such a limited and selected group of individuals can not be representative of public views. However, the resources required for truly representative polling were not available in the current project phase. Nevertheless, the existing contacts to the GMF group provided a valuable opportunity to explore reactions of relevant public officials to a set of questions that could usefully be put at a later stage to a wider spectrum of public representatives.

6.1 The scope

The local representatives of GMF filled in the survey in a specific context: two workshops carried out in the framework of the DG TREN funded European Project Local Competence Building and Public Information in European Nuclear Territories (contract number TREN/06/NUCL/S07.59158). The first workshop was held on 5th and 6th September 2007 in Neckarwestheim, Germany, and the second one on 4th and 5th October 2007 in Brussels. The objectives of the two workshops were to disseminate information about governance in nuclear territories and to favour networking activities. The speakers were representatives of nuclear municipalities and different competent authorities, including the European Commission. The participants invited to the workshops were representatives of GMF municipalities as well as other interested audience, such as politicians at the regional level, managers of nuclear facilities and interested citizens.

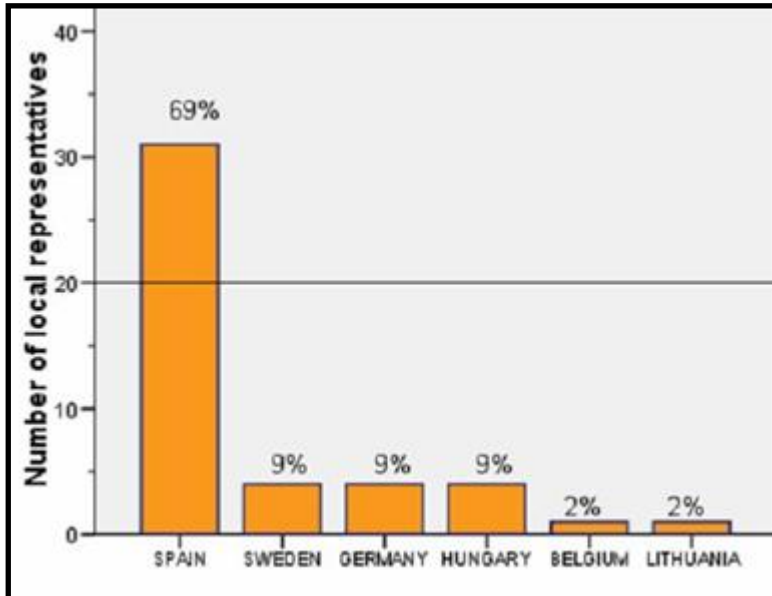
The questions asked in the survey included the following issues (see Annex 1 for more details).

1. Opinion on a possible collaboration among European countries to develop shared repositories.
2. Willingness to support the establishment of a European Development Organisation to further analyse various aspects related with shared repositories.
3. Main criteria for selecting possible sites for shared repositories.
4. Main issues that would affect willingness of a local community to accept a shared repository.
5. Preferred procedure for the decision on the location of a shared repository.
6. Advantages and drawbacks for a local community.

Descriptive statistics was used to analyse the attitudes and opinions of the interviewed local authorities (using the SPSS software). The sample was constituted by 45 local representatives from different municipalities of six European countries (see Figure 1). It can be noted that Spain was the most represented country (almost 70% of the total sample). The main reason for that is that Spanish mayors are the majority in GMF because most municipalities from the Spanish Association of Municipalities in Nuclear Areas (AMAC) take part as individual members in the GMF. On the contrary, the representation of municipalities from other associations like ASKETA in Germany, are made through only one municipality which is the president of the association.



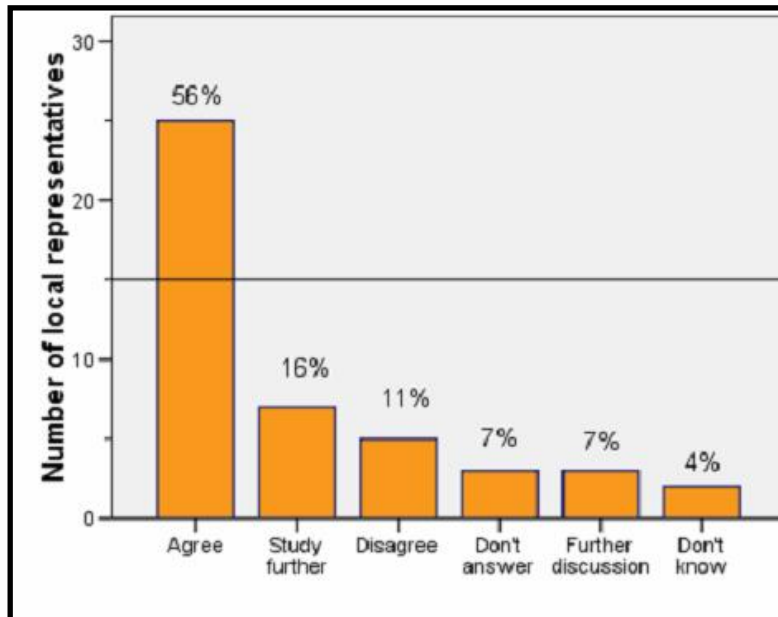
Figure 1 The sample



6.2 Results

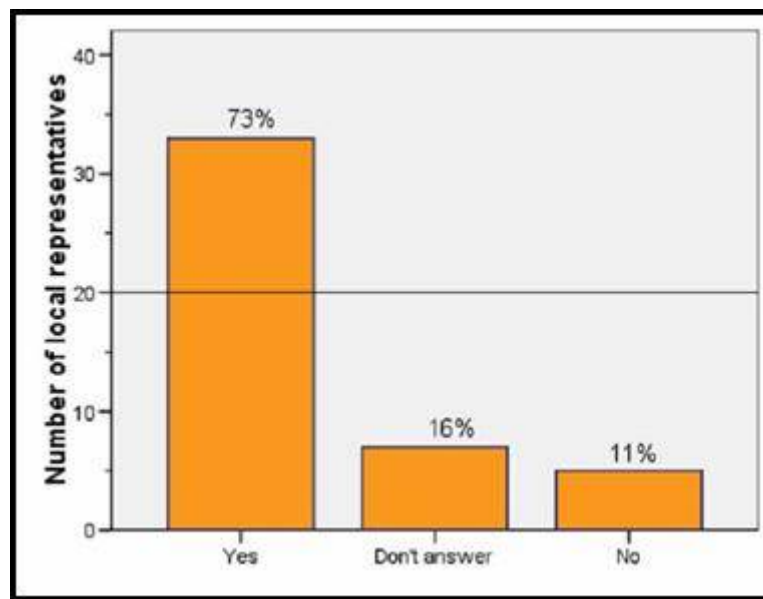
The first question of the survey was: “What is your opinion regarding the collaboration of countries in Europe, which do not have the resources or favourable conditions to host a national repository, to participate technically, scientifically and financially to develop shared repositories?”. 56% of the sample agrees on the possibility of collaborating among EU countries to develop shared repositories. 23% require further investigation and debate and 11% do not know or do not answer. Only 11% definitely does not agree (see Figure 2).

Figure 2. Opinion on a possible collaboration among EU countries to develop shared repositories



These results show a clear need to further analyse this option, which is confirmed by the next question, i.e. “Would you support an initiative backed by the EC to set up a formal European Organisation to study further the different aspects related with shared repositories?”. 73% of the sampled answered positively, and only 11% answered that they would not support such an initiative (see Figure 3).

Figure 3 Support to a European organisation to study further





For the following questions, the local representatives could choose a score for each criterion, which indicated the importance they gave to each criterion with respect to other criteria:

- ✓ “According to your opinion, which would be the main criteria to take into account for selecting possible sites for shared repositories in Europe?”
- ✓ “According to your opinion, which would be the main issues that would affect willingness of a local community to accept a shared repository?”
- ✓ “According to your opinion, what should be the procedure for the decision of sitting a regional repository?”
- ✓ “According to your opinion, which would be the advantages for a community to host a shared repository?”
- ✓ “Which would be the drawbacks for a community to host a ERR?”

Figure 4, 6, 8, 10 and 12 are syntheses of the statistical distributions of the scores given to the individual criteria as the first, second, ..., last criterion (scale: 1-100). The height of the bar represents the number of respondents who put that criterion in 1st, 2nd, ... place and the bold figures on the bars are these numbers of persons expressed as a percentage of the 45 participants. The criteria are not exclusive and for this reason the total is not 100.

When asked about the most important criteria to choose a possible site for shared repositories, the local representatives indicated “Health and safety” as the most important criterion (score as the first criterion: 73), see Figure. Local acceptance is also very important (score as the first criterion: 27; score as the second criterion 42). Another important issue is the favourable geological conditions (score as the first criterion: 40; score as the second criterion: 20).

Figure 4. Criteria for selecting possible sites for shared repositories

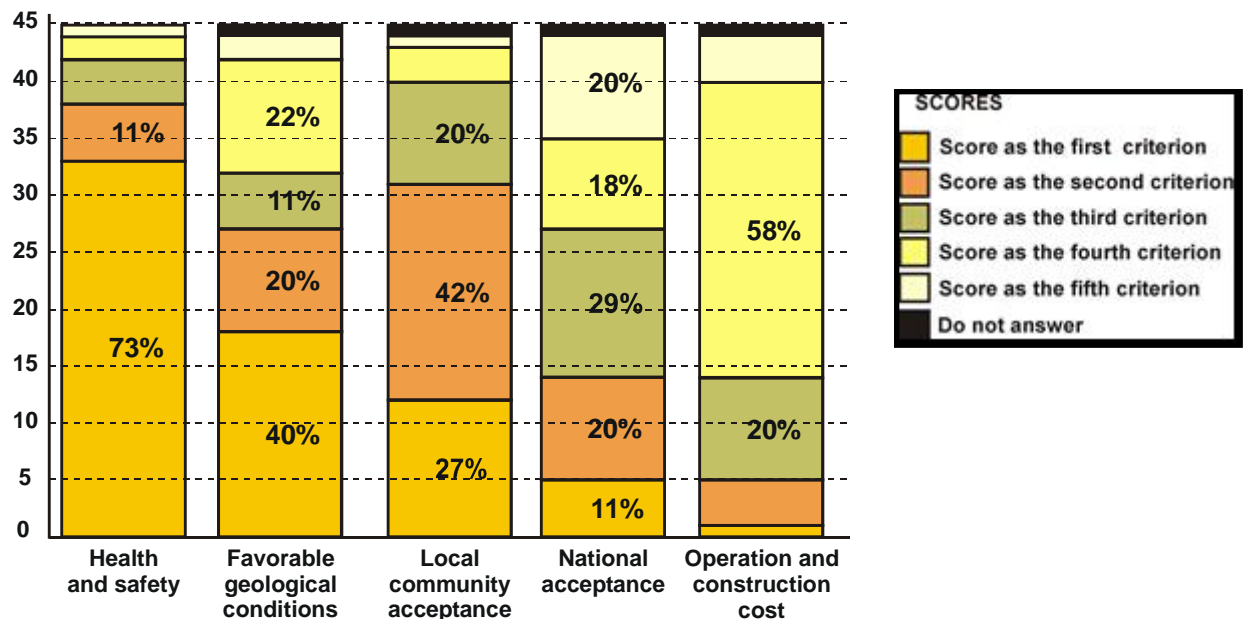
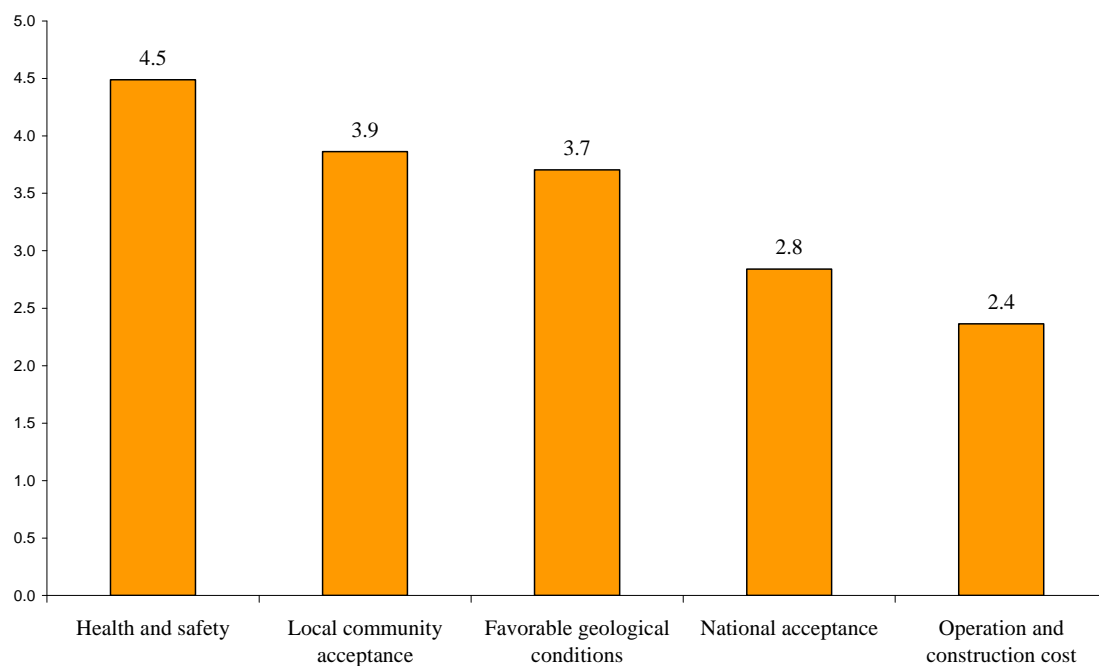




Figure 5, 7, 9, 11 and 13 synthesise the final result of each criterion, which was calculated as follows. First of all, a score was established for each position (last position=1; second-last position =2; third-last position= 3, and so forth; don't know/don't answer=0). Then, a weighted average was performed by multiplying the score of each position by the number of the respondents who put the criterion in this position, and dividing the sum by the total number of respondents who indicated a position for the criterion (i.e. excluding those don't answering or don't knowing). It can be noted that there is no particular reason for giving the scores 1,2, 3, etc. to the criteria. What is important here is not the absolute value of the final results but the criteria ranking, which would not change if different values are given to the criteria positions (provided that the score of the last criterion is lower than that of the second-last, which should be in turn lower than the score of the third-last, etc.).

The criterion "Health and safety" is the one with a highest score (4.5), followed by "Local community acceptance" (3.9) and "Favourable geological conditions (3.7). The criteria "National acceptance" (2.8) and "Operation and construction cost" (2.4) obtained the lowest scores.

Figure 5 Criteria for selecting possible sites for shared repositories (final results)



As regards the issue that would affect willingness of a local community to accept a shared repository, confidence in safety is crucial (score as the first criterion: 73), see Figure 6. Other very important issues are the following:

- ✓ Trust in the implementing organisation (score as the first criterion: 18; score as the second criterion: 29).
- ✓ Type of disposed radioactive waste (score as the first criterion: 24; score as the second criterion: 20).

- ✓ Economic compensation (score as the first criterion: 20; score as the second criterion: 20).

There is no agreement on the importance of the number of exporting EU countries and on the operational phase

Figure 6 Issues that affect willingness of a local community to accept a shared repository

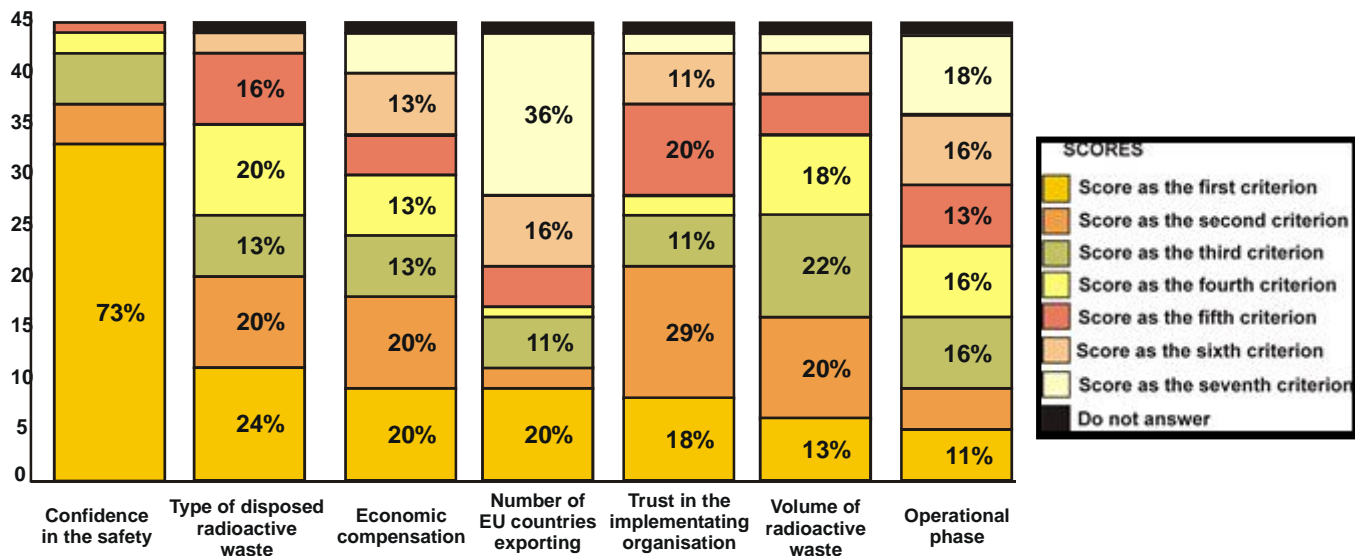
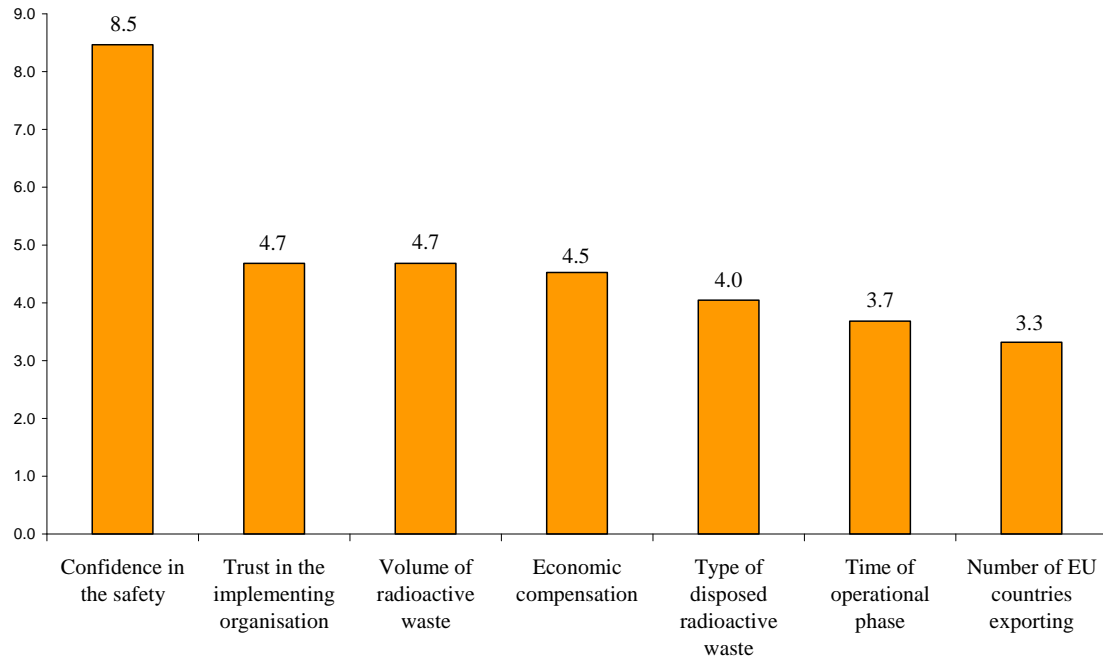


Figure 7 shows that the final result of the criterion “Confidence in safety” (8.5) almost doubles the one of the following criteria, i.e. “Trust in implementing organisation” (4.7), “Volume of radioactive wastes” (4.7) and “Economic compensation” (4.5). The least important criteria are “Type of disposed radioactive waste” (4.0), “Time of operational phase” (3.7) and “Number of EU countries exporting” (3.3).



Figure 7 Issues that affect willingness of a local community to accept a shared repository (final results)



According to most local representatives that filled in the survey, the location of a shared repository should be chosen through a volunteering procedure (score as the first criterion: 80), see Figure 8. National agreement is the second preferred procedure (score as the first criterion: 60). Most local representatives do not agree with an EU decision or a majority decision by the participant countries. These results clearly show the importance of local community participation in the decision-making process.



Figure 8 Procedure to decide the location of a shared repository

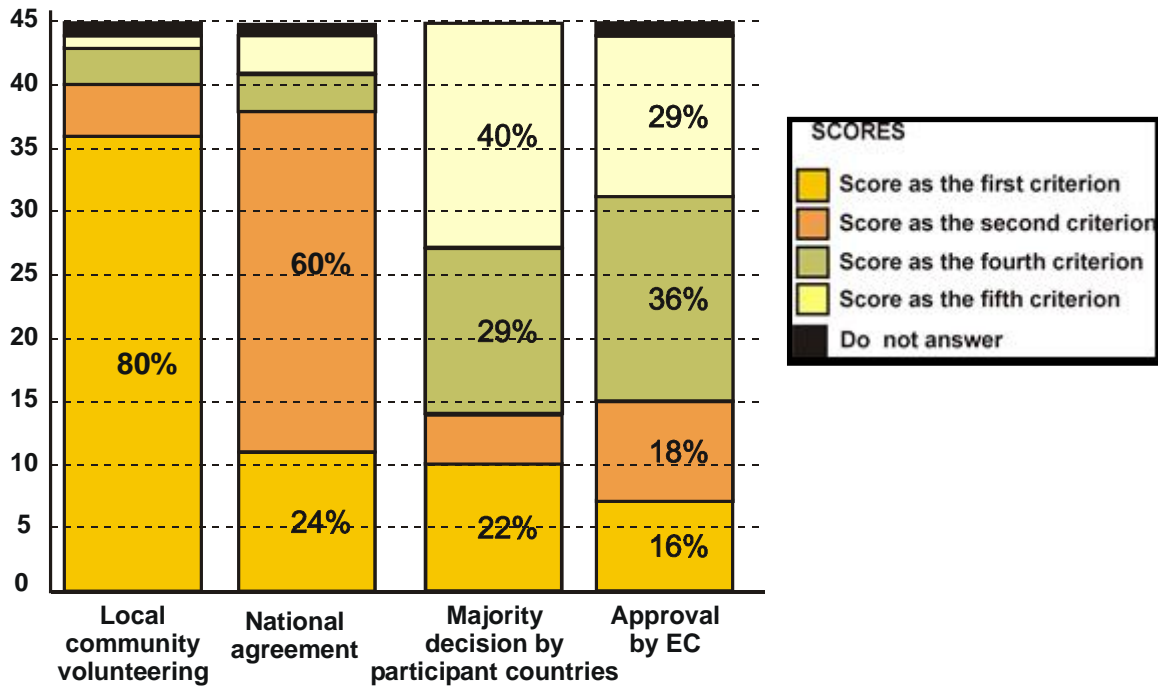
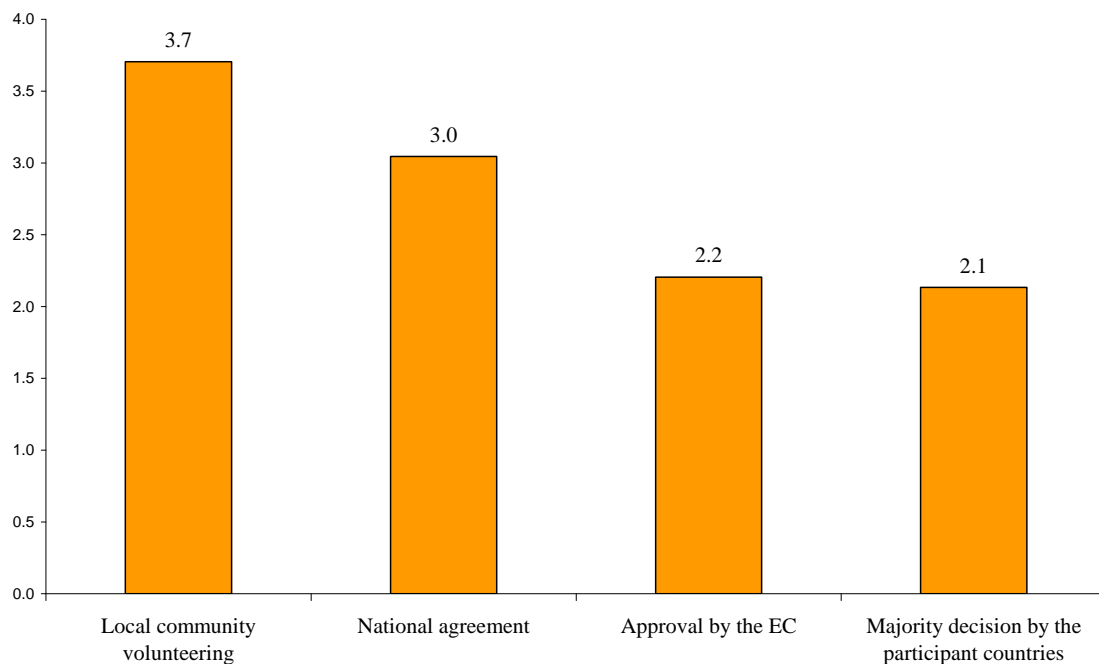


Figure 9 shows that “Local community volunteering” obtained the highest result (3.7), followed by “National agreement” (3.0). “Approval by the EC” (2.2) and “Majority decision by the participant countries” (2.1) were the least preferred procedures.

Figure 9 Procedure to decide the location of a shared repository (final result)

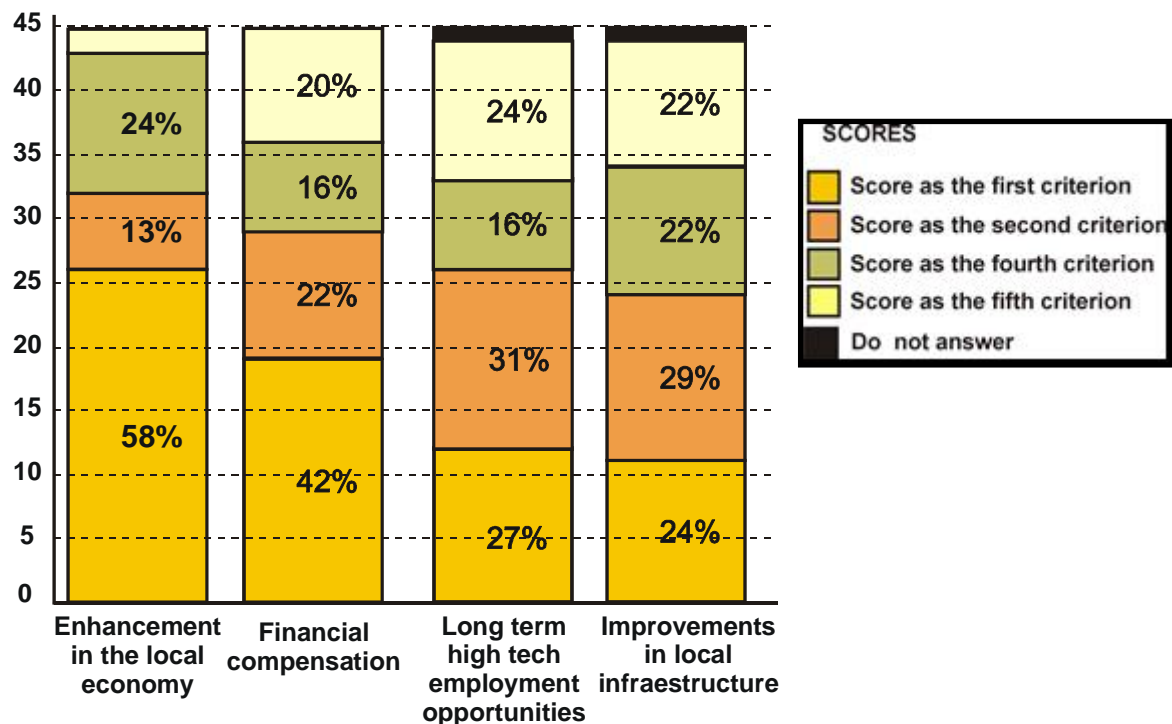




As regards the advantages of hosting a shared repository, the enhancement of the local economy is seen as the most important advantage (score as the first criterion: 58), see Figure 10. In addition:

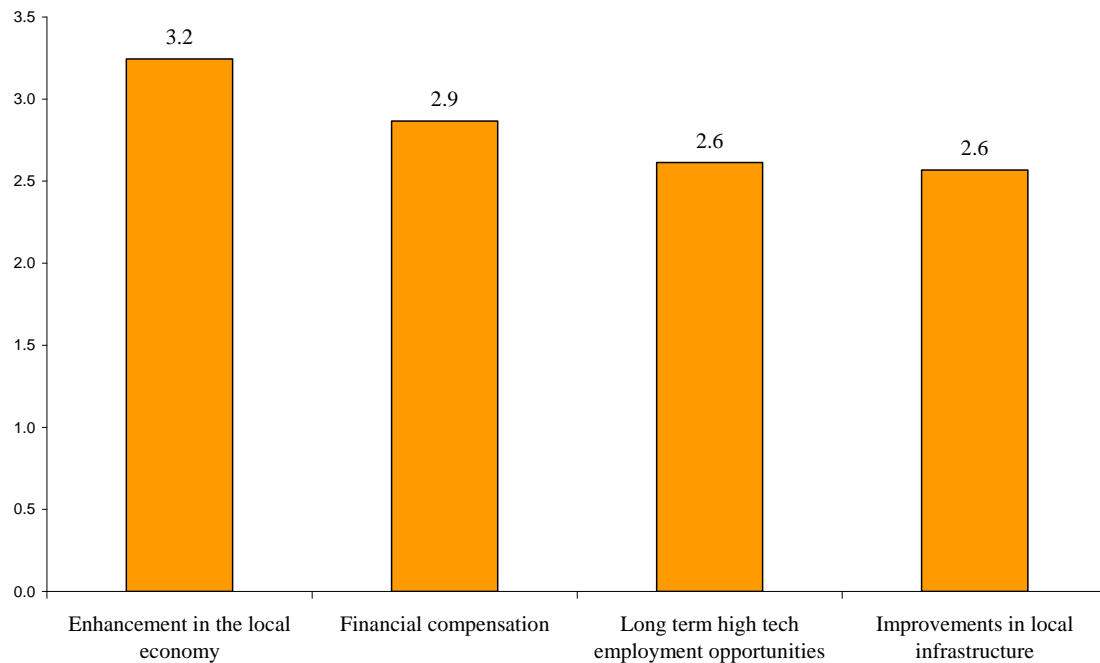
- ✓ Local compensation is also important (score as the first criterion: 42; score as the second criterion: 22).
- ✓ Long term high tech employment opportunities (score as the first criterion: 27) and improvement in local infrastructure (score as the first criterion: 24) also play an important role.

Figure 10 Advantages for local communities



These results are summarised in Figure 11, which shows the final results for the question on the advantages for local communities: “Enhancement in the local economy” (3.2); “Financial compensation” (2.9); “Long term high tech employment opportunities” (2.6) and “Improvements in local infrastructures” (2.6).

Figure 11 Advantages for local communities (final result)



The most worrying drawbacks for local representatives are the possible worsening of reputation as a tourist or agricultural region (score as the first criterion: 40; score as the second criterion: 24) and the reduced perception of safety (score as the first criterion: 31; score as the second criterion: 31), see Figure 12. The potential impact on property value is also an issue (score as the first criterion: 22; score as the second criterion: 33)⁴. The local representatives seem to be less worried about the environmental impact.

⁴ It should be noted that no losses in the tourist sector or in the property value related with a nuclear facility are documented.



Figure 12 Drawbacks for local communities

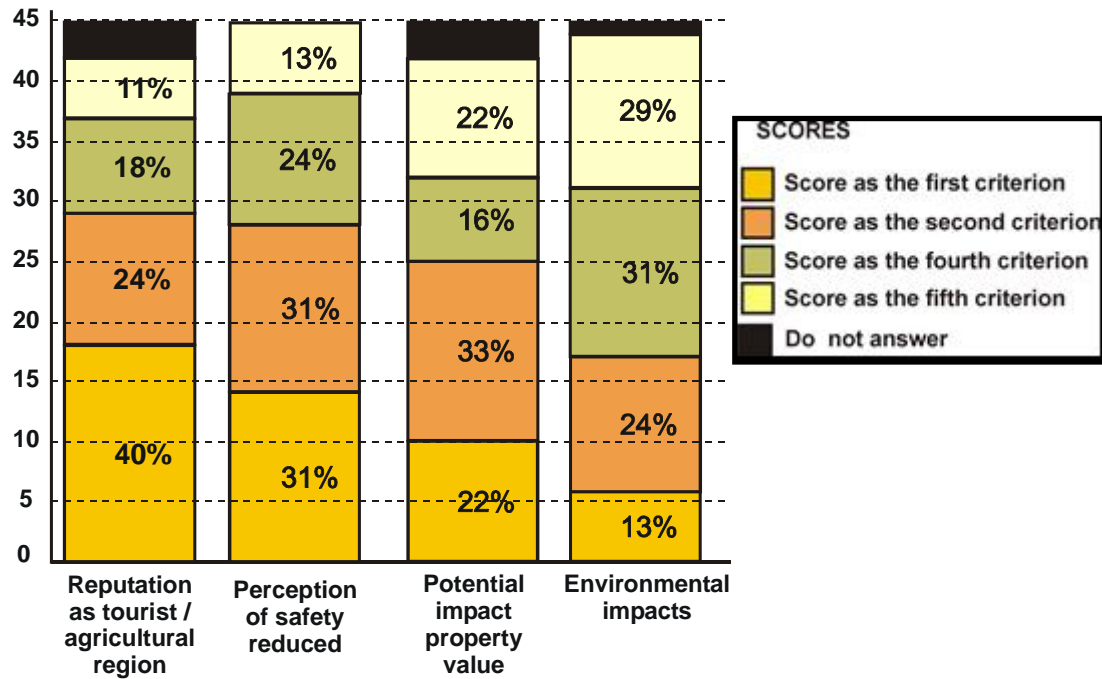
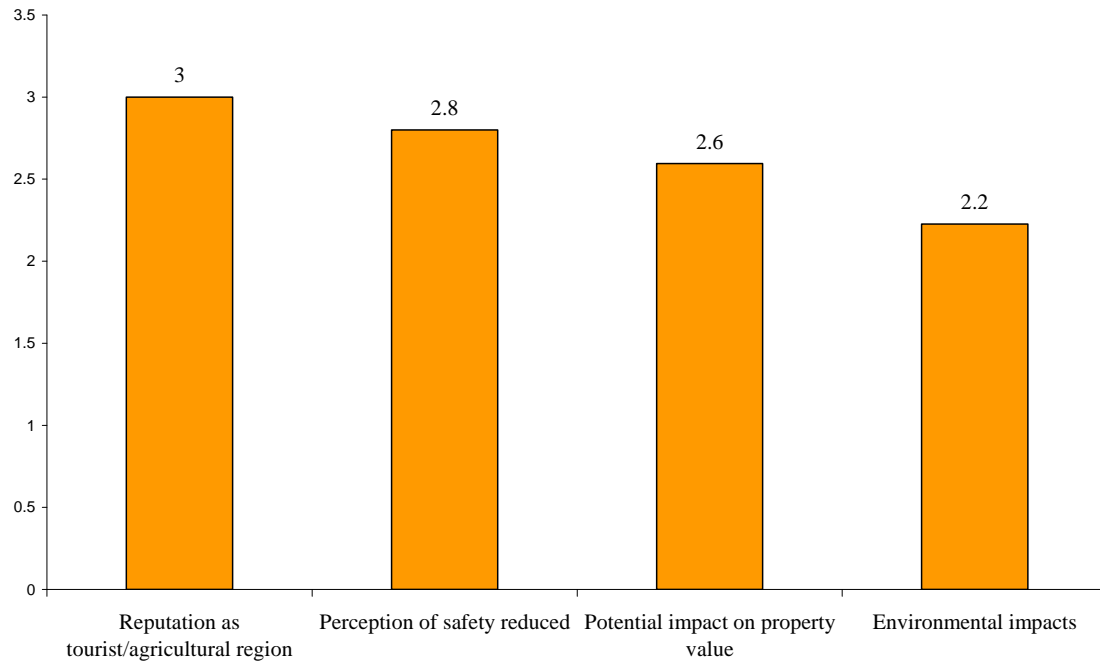


Figure 13 shows that the drawback with a highest final result is “Reputation as tourist/agricultural region” (3), followed by “Perception of safety reduced” (2.8); “Potential impact on property value” (2.6). The drawback considered less important is “Environmental impact” (2.2).



Figure 13 Drawbacks for local communities (final results)



6.3 Discussion

As explained above, the sample was not intended to be representative of the opinion of European local representatives, not only because the sample was not sufficiently large, but also because the geographical origin of the surveyed local authorities did not reflect European population (70% of the local authorities were Spanish) and because the municipalities involved were all hosts of existing nuclear facilities. It is also important to underline that the opinion of local authorities does not necessarily reflect that of the population in their municipalities. However, the survey provides interesting insights on which are perceived as the main points in favour and against multinational repositories.

The first observation that can be made is that the fraction of the interviewed local authorities in favour of a shared solution for radioactive waste disposal is considerably higher than that of the population in general. In fact, on the one side, according to the Eurobarometer results, only 18% of population is in favour of regional repositories, and 63% are against (in Spain, the country of the majority of GMF members surveyed, in 2001, 5% of population were in favour and 62% were against). On the other side, according to our survey, only 11% of the interviewed local authorities disagree with a shared solution of radioactive waste disposal, whereas 56% agree and 18% need further research and discussion. In addition, 73% of the interviewed local authorities would support a European organisation to further study the possibility of setting up a multinational repository.



These results show that the opinion of local authorities does not necessarily reflect that of population in general. One plausible explanation of the difference between the opinion of local authorities of municipalities hosting nuclear facilities and the opinion of population in general may be the fact that the former are more familiar with the problems related with radioactive waste disposal, and may see international collaboration as a possible solution. Another possible explanation may be the way the question was formulated. The question in the survey discussed here was presented in a more positive way (“What is your opinion regarding the collaboration of countries in Europe, which do not have the resources or favourable conditions to host a national repository, to participate technically, scientifically and financially to develop shared repositories?”) than the one in the Eurobarometer survey referring to “underground tips”.

Another interesting point is that according to the interviewed local authorities, health and safety considerations should play a crucial role when choosing a site for multinational repositories. Moreover, confidence in safety is by far the most important issue that would affect local willingness to accept a multinational repository. This result reveals that in order to obtain local acceptance the most important step is *to show that the safety of the local population is guaranteed*.

Another point that is worth to underline is that most local authorities see local community volunteering as the best procedure to choose a possible site for a multinational repository. At the opposite extreme, a top down decision taken by the majority of participant countries or by the European Union itself would not be approved, and would probably raise discontent and protests. This sheds light on the *necessity of involving local authorities in the decision-making process*. In fact, local community acceptance is seen as a very important criterion when deciding the location for a multinational repository (see Figure 4 and 5).

In addition, even though costs are not seen as an important factor for selecting possible sites for shared repositories, *improvement of the local economy and economic benefits are seen as the most important advantages* for a local community to host a multinational repository.

The most important disadvantage for local authorities is the *possible economic loss for the tourist and agricultural sector*. Therefore, these possible losses should be adequately compensated to local community hosting a multinational repository. It is also interesting to note that whereas the reduced perception of safety considered an important drawback, the environmental impact is the least important criterion for local authorities (but not necessarily for local population).

7 Preliminary recommendations for the communication strategy of the EDO

WP 1 describes the possible legal and business options for developing a multinational repository, as well as some key features in terms of organisation and budget requirements. The construction and implementation of a shared repository is a long process, which will last several years. For this reason, the implementing organisation could change during the process. WP1 distinguishes between a first, exploratory phase – up to the phase of identifying a suitable site or sites- and an implementing phase. The organisation in charge of the process during the first phase was called European



Development Organisation (EDO). The objectives of the EDO would be to develop a European shared repository programme, win partners for the project, enhance political and public acceptability and – crucially – identify technically and societally acceptable sites.

In this section, preliminary recommendations for the EDO communication strategy are given. In particular, we will focus on the first steps of the EDO, which include the period between its constitution and the moment when a potential host for the multinational repository will be sought. In fact, the further steps will strongly depend on the characteristics of the process so far, the degree of consent and opposition that the concept of shared repository may arouse, as well as on the institutional structures and relevant stakeholders of the potential host countries.

As it has been discussed in Section 3, the implementation of a shared repository will certainly give rise to some opposition, and for this reason a communication plan is an indispensable step in the development of the EDO strategy.

As shown in Section 3, not much literature can be found about public perceptions and the political position of national and international bodies regarding shared repositories. Since information is crucial in order to develop an action plan, the first step of the EDO's communication strategy should be a **stakeholder analysis** at national and European level, in order to explore public perceptions on a shared solution for the radioactive waste management in Europe.

The objective should be to compile a map of the relevant social groups that would be involved in the process, including national agencies, competent ministries, environmental organisations, municipalities hosting nuclear facilities, etc. For each group of stakeholders, information should be obtained about (a) their opinion on the possibility of importing and exporting radioactive wastes; (b) their perception on the main issues in favour and against; (c) the preferred decision procedure, which would facilitate the search for an agreement. In addition, their degree of interest and their capability of influencing the process should be investigated.

Quantitative and qualitative surveys can be used to identify the perceptions, opinions and interests of the relevant stakeholders. As regards quantitative methodologies, the structure of the questionnaire presented in Section 5 could be used.

Qualitative research could be done through a set of interviews with key stakeholders. National governments and agencies, as well as international institutions, like the IAEA and the EU (including Members of the European Parliament, officials in DG TREN, DG Environment, etc), should be formally contacted in order to explore their position on the shared repository option.

In addition, a formal collaboration with the Group of Municipalities hosting nuclear Facilities (GMF) could be pursued. It would be useful to obtain information on opinions and perceptions not only of European population in general, but also of population of localities hosting a nuclear facility. In fact, they could help to understand the possible positions of local authorities in the different stages of the siting programme (pre-siting, siting and post-siting) of a shared repository.



Finally, it could be interesting to analyse the opinions and perceptions of a representative sample of the European population, for example by asking the European Commission to include again questions on multinational repositories in the Eurobarometer survey.

Based on the stakeholder analysis and possibly on the survey, a **communication plan** should be developed. The communication plan should anticipate a ‘frequently asked questions’ background document to reply to all possible concerns individuated through the stakeholder analysis, putting an emphasis especially on those which were proven to be perceived as more important.

Communication should be directed both to key actors and to the public in general. As regards the first group, the EDO should organise meetings with national agencies, national governments, international institutions like the European Commission, the IAEA, and so forth, in order to explain the concept of shared repository and to encourage them to support it. In this phase, contact should be made only to institutions at national level, because potential hosts for the shared repository will only be defined in a second phase among the countries participating in the EDO (see WP1).

The communication plan should also include information and communication to the public, public engagement and dissemination activities. Table 5 summarises some of the key principles that could inspire the communication policy of the EDO.

Table 5. Key principles /basis on the communication policy of the EDO

<ul style="list-style-type: none">✓ <i>Information exchange in a credible, timely and accurate manner</i>✓ <i>Information tailored to specific stakeholder groups</i>✓ <i>Tools to establish a constructive two-way dialogue</i>✓ <i>Communication not restricted to national boundaries and in different languages</i>✓ <i>Transparency</i>✓ <i>Active involvement of the stakeholders</i>
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Giving information about all aspects of the shared repository in a transparent way is crucial to obtain trust from the stakeholders. In order to ensure comprehensive and objective information, a plurality of sources needs to be used. Furthermore, stakeholders should be involved from the beginning of the process, in order to reach a consensus on a solution that could be more easily accepted.

In order to promote discussion on the possibility of a shared repository, **dissemination activities** are crucial. For this reason, the EDO should organise workshops, conferences and training course on the concept of shared repositories. In addition, publication of



books and articles written in a lay language could be useful to disseminate the concept of shared repositories.

8 Conclusions

In this report, the possible public and political acceptance of multinational repositories was analysed through 1) a literature review that illustrated the main reasons why governments and citizens may be in favour or against a shared management of radioactive wastes; 2) the results of the Eurobarometer survey related with multinational repositories; 3) the analysis of Member States' legislation and the position of national Agencies and international bodies about multinational repositories; 4) a questionnaire handed out during GMF meetings to 45 local representatives of European municipalities (mainly Spanish municipalities) hosting nuclear facilities.

All papers reviewed, both in favour and against the multinational repository option, make clear that introducing the idea of multinational/regional repository will be a major political challenge. Among the analysed agencies, only a few are officially open to consider international disposal as an option. Most European governments ban import of foreign wastes in their territories. The Eurobarometer results confirm this perception, by showing that only a small (even though increasing) share of population is in favour of a shared solution for radioactive waste disposal, i.e. 18%, whereas 63% is against and 12% does not know. However, these data are not up to date, and if this question were asked today the result may change, because the idea of a shared repository has since then been more widely discussed in Europe and is not a taboo anymore.

Another important point to consider is that in order to achieve a higher degree of consent it is important that multinational repositories are not perceived as a way to take unfair advantage of politically weak or poor countries, and that fair economic benefits are given to hosting population (IAEA, 2004; Boutellier et al., 2006).

For the surveyed local authorities, a local community volunteering approach is the preferred way for the choice of the candidate site. This approach requires that the advantages of hosting a multinational repository- both in terms of direct economic benefits and improvement of infrastructure, employment and in general life standard-should outweigh in the view of local communities the disadvantages. In this context, it is important to reassure local population of their safety. The questionnaire results show that in order to improve public acceptance of local authorities, a high degree of safety have to be guaranteed and the economic development of local communities have to be favoured.

Finally, it can be observed that if this process is to be carried out, a high degree of trust in the national and international institutions is essential. In order to obtain trust from population, transparency, early involvement and equity should be strongly pursued.



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10 Annex 1. The questionnaire

Dear mayor / councillor,

SAPIERR⁵ is a European project which investigates the potential opportunities for European countries to cooperate in shared initiatives towards radioactive waste storage and disposal facilities. As you know, there are countries whose radioactive waste volumes do not easily justify a national repository, and/or countries that do not have the resources or favourable natural conditions for waste disposal to dedicate to a national repository project.

SAPPIERR explores how these countries can collaborate towards a shared solution from different viewpoints – political, social, legal, safety and security, etc. Your opinion, as a local representative of a nuclear community, would be very valuable for the project.

We thank you in advance for spending a few minutes with us...

Meritxell Martell

mmartell@enviros.biz

Sex : Feminine Masculine
Age: < 35 35 - 55 > 55
Role: Mayor Participant
Country:

1. What is your opinion regarding the collaboration of countries in Europe, which do not have the resources or favourable conditions to host a national repository, to participate technically, scientifically and financially to develop shared repositories?

- Agree
- Disagree
- Further research
- Further political and social discussion
- Don't know
- Others:

⁵ SAPIERR: Support Action on a Pilot Initiative for European Regional Repositories (www.sapierr.net).



2. According to your opinion, which would be the main criteria to take into account for selecting possible sites for shared repositories in Europe?

Please, rank in order of importance where 1 is the highest importance and 5 is the lowest.

- a) Favorable geological conditions
- b) Operation and construction cost
- c) Health and safety
- d) Local community acceptance
- e) National acceptance

Other (please specify which):



3. According to your opinion, which would be the main issues that would affect willingness of a local community to accept a shared repository?

Please, rank in order of importance where 1 is the highest importance and 7 is the lowest.

- a) Economic compensation (direct payments, job opportunities)
- b) Number of EU countries exporting their radioactive wastes to the ERR
- c) Type of disposed radioactive waste
- d) Volume of radioactive waste to dispose
- e) Time of operational phase of the repository
- f) Confidence in the safety
- g) Trust in the implementing organisation

Other (please specify which):

4. According to your opinion, what should be the procedure for the decision of sitting a regional repository?

Please, rank in order of importance where 1 is the highest importance and 4 is the lowest.

- a) Local community volunteering
- b) National agreement
- c) Approval by EC
- d) Majority decision by the participant countries

Other (please specify which):

5. According to your opinion, which would be the advantages for a community to host a shared repository?

(In case of several answers, please rank them in order of importance: 1 for the highest importance and 4 for the lowest)

- a) Financial compensation
- b) Enhancement in the local economy
- c) Long term, high technology employment opportunities
- d) Improvements in local infrastructure

Other (please specify which):



6. Which would be the drawbacks for a community to host a ERR?

(In case of several answers, please rank them in order of importance: 1 for the highest importance and 4 for the lowest)

- a) Environmental impacts
- b) Perception of safety reduced
- c) Potential impact on property value
- d) Reputation as tourist region/agricultural centre

Other (please specify which):

7. Would you support an initiative backed by the EC to set up a formal European Organisation to study further the different aspects related with shared repositories?

- Yes
- No
- Don't know

Comments:

Please, add any general comments you may have on this topic: